REMARKS

Claims 1-29 are pending in the present application. In the Final Office Action mailed November 1, 2005, the Examiner rejected claims 18-24 under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner next rejected claims 1-3, 6, 10, 12, 18, 19, 23, 24, 25, 27, 28, and 29 under 35 U.S.C. §102(b) as being anticipated by Duffy et al (USP 5,685,680). Claims 1-3, 6, 7, 10, 12, 16, 18, 19, 23, 24, 25, 27, 28 and 29 also stand rejected under 35 U.S.C. §102(b) as being anticipated by Irimies (USP 5,493,833). Claims 4, 5, 8, 9, 11, 13, 14, 15, 16, 17, 20-22 and 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Duffy et al in view of Rohe (USP 2,784,758).

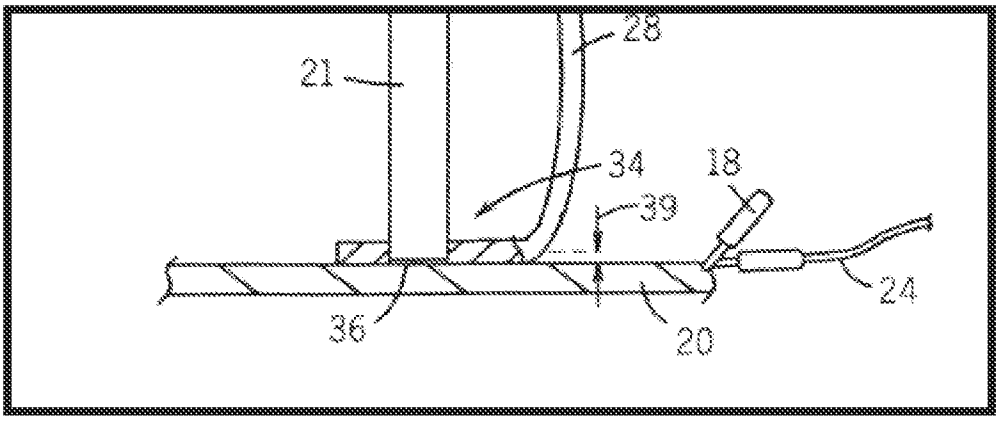
Claims 16 and 17 have for the first time been objected to because of informalities. Claim 16 was objected to for insufficient antecedent basis for "the plurality of ridges" called for therein. Applicant has amended claim 16 to address the antecedent basis issue. Applicant has also amended claim 17 to correct and clarify that which is called for therein. Applicant believes claim 17 clearly defines that each ridge has a base and that a height of each ridge is substantially similar to a width of the base. As the Examiner has first presented these objections in the Final Office Action of November 1, 2005, and Applicant has not been afforded an opportunity to respond thereto, Applicant requests that the amendments to claims 16 and 17 be entered as placing the claims in better condition for appeal.

The Examiner rejected claims 18-24 under 35 U.S.C. §112, second paragraph as being indefinite in calling for forming a second end of a weld stud to "non-interferingly engage" a workpiece. Although Applicant appreciates the Examiner's providing of the definitions of the terms "interfere" and "engage"; Applicant does not agree with the Examiner's limiting interpretation of those definitions. First, "An applicant is entitled to be his or her own lexicographer." That is, Applicant is free to define their invention in any terms they so choose even if the usage of those terms is contrary to a common meaning. Applicant's usage of the terms in the claims corresponds to the ordinary meaning of those terms and Applicant has merely done what is expressly authorized under MPEP §2111.01.III. It is only the nonsensical interpretation of the terms of these claims which creates any lack of clarity therein.

After citing the definitions of interfere and engage, the Examiner states that "it is not understood how said 'second end' can 'non-interferingly engage' a workpiece, as the two words seen to contradict each other" and that "[t]he term 'engage' plainly means 'to mesh or lock' and is synonymous with 'interfere'." Such a conclusion is not supported by the definitions provided by the Examiner. Additionally, Applicant is unaware of any unitary authority which provides the

definition of any term. Further, such interpretation also requires that a person of ordinary skill in the art would not appreciate a distinction between an interfering engagement and a non-interfering engagement and would not only render the modifier "non" as merely superfluous but would render no engagement to ever be "non-interfering". Such a conclusion is simply unsustainable.

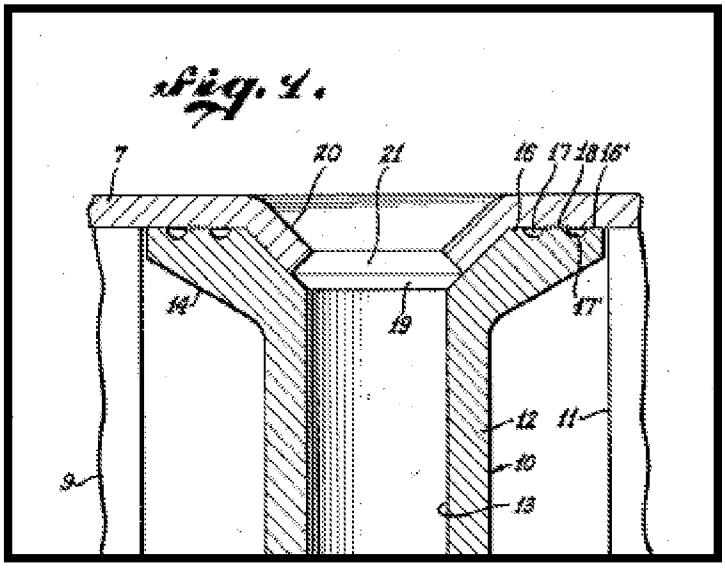
The Examiner states that "[t]he term 'engage' plainly means 'to mesh or lock'' even though such examples are only provided as synonyms in one of the definitions of 'engage' provided by the Examiner. Nonetheless, Applicant agrees that the ordinary meaning of "engage", as defined in Merriam-Webster Online (courtesy copy enclosed herewith), includes mesh, operate, lock, or more commonly, "to cause (mechanical parts) to mesh". Also as defined in Merriam-Webster Online, (courtesy copy enclosed herewith), mesh is commonly defined as "working contact (as the teeth or gears)". That is, parts that mesh are merely parts that are in working contact and are not necessarily interfering with one another but are merely in working contact. The Examiner's interpretation that engaged parts must interfere like the teeth of gears restricts the definition of "engage" to one exemplary usage of the term rather than the general usage of the term as is required. In contrast thereto, parts that "interfere", as defined in Merriam-Webster Online (courtesy copy enclosed herewith), interpose in a way that hinders or impedes. That is, it is clear that an engagement can be one of interfering and non-interfering. The distinction is clearly shown in the comparison of the present invention and the invention of Rohe.



As partially reproduced above, Fig. 2 of the above-captioned Application clearly shows a non-interfering engagement between stud 21 and workpiece 30.

Proximate target point 36, there is no interference between weld end 34 of weld stud 21 and workpiece 20. That is, weld end 34 and workpiece 20 do not engage in a manner that hinders

or impedes either weld stud 21 or workpiece 20. In other words, the second end the weld stud is constructed to non-interferingly engage the workpiece.

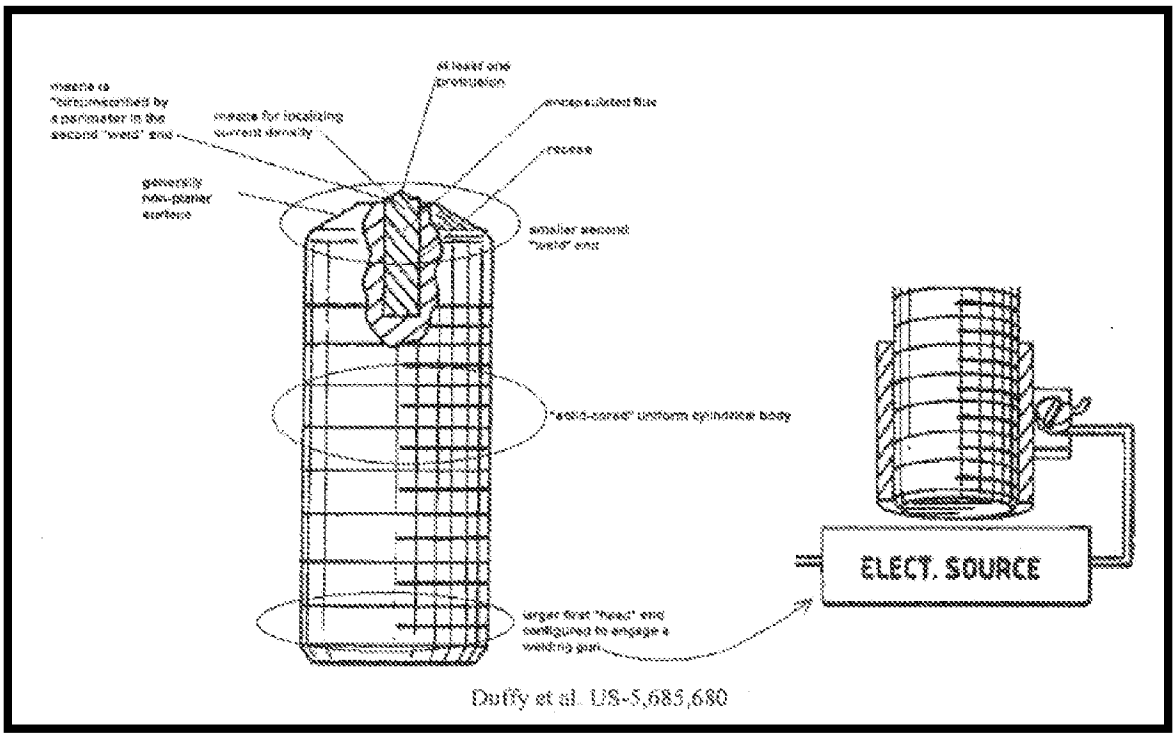


Unlike the claimed non-interfering engagement of the weld stud of the above captioned application, Rohe discloses a sleeve that requires an interfering engagement with a workpiece to ensure alignment therewith. As shown in Fig. 1 of Rohe, partially reproduced at right, the engagement between the end flange 14 of sleeve 12 engages skin sheet 7 in an interfering manner. That is, dimple 20 of skin sheet 7 protrudes into counterbore 19 thereby hindering or impeding the engagement between the skin sheet 7 and sleeve 12. The through bore nature of sleeve 12 requires the interfering engagement between the dimple 20 of sheet 7 and the counterbore 19 of sleeve 12 so that the passage through sleeve 12 is aligned with opening 21. Without the interfering engagement between the respective parts, a sleeve could be attached to a sheet without being aligned with the hole therethrough thereby rendering the sleeve of Rohe useless for its intended purpose by being hidden within the skin sheets. Accordingly, at least for those reasons set forth above, Applicant believes claims 18-24 are in accordance with 35 U.S.C. §112, second paragraph. As such, Applicant requests that the rejection thereto be withdrawn.

The Examiner next rejected claims 1-3, 6, 10, 12, 18, 19, 23, 24, 25, 27, 28, and 29 under 35 U.S.C. §102(b) as being anticipated by Duffy et al. stating that "[i]n short, Duffy et al. teach [sic] a weld stud having a first 'head' end, a second reduced end having a 'nipple' or 'at least one protrusion' to direct current flow to a 'workpiece' or 'connector'." The Examiner further states that "[t]he body has a solid core with a generally uniform cylindrical shape" and that "[t]he second end is 'generally non-planar surface'." The Examiner further asserts that "[t]he second end comprises a 'recess', and also comprises a flux packet which is 'encapsulated'" and that "[i]n its broadest sense, Duffy et al. discloses a 'means for localizing current density generally uniformly about a majority of an area circumscribed by a perimeter of the face of the weld (i.e., second) end' of the stud." Applicant respectfully disagrees. Even a cursory review of all of the

figures of Duffy et al., without consideration of the text of the reference which relates thereto, indicates the entirely planar or generally planar nature of each of the welding studs disclosed therein as shown in Figs. 2 and 3, respectively.

Although Applicant appreciates the Examiner's partial reproduction of Figs. 3 and 4 of Duffy et al., and the labeling added thereto, Applicant respectfully disagrees that that which the Examiner alleges is shown therein. Claim 1 calls for, in part, welding stud having a body with a first end that has an outer diameter that is greater than an outer diameter of a second end. The first end is further defined as the end of the welding stud constructed to engage a stud welding gun and the second end is further defined as having at least one recess formed therein. As reproduced below, the labels added to the figures of Duffy et al. not only add additional information extraneous to the four corners of Duffy et al., the Examiner's statements added thereto are contradictory to that which is shown in the figures.



Duffy et al. US-5,685,680

That is, the Examiner states that Duffy et al. shows a "larger first 'head' end configured to engage a welding gun" and a "smaller second 'weld' end." The figure clearly shows two generally uniform ends with the distinction therebetween that the first end tapers to a nipple. The outer diameters of the ends of the body of the welding stud are clearly shown as being substantially the same. Saying that the outer diameters of the ends of the body are different does

not make it so. Furthermore, claim 1 further defines the weld end of the welding stud as having a recess formed therein. As shown in the Fig. of Duffy et al., there is no recess in the welding stud as called for in claim 1. Applicant does not necessarily disagree that Duffy et al. shows a flux capsule in the end of the weld stud however; that is not what is called for in claim 1. Claim 1 calls for at least one recess formed in the second end of the welding stud. As clearly shown in the Examiner's circled 'second end' of the weld stud of Duffy et al., there is no recess in the welding stud shown therein. The Examiner's interpretation would require the removal of the flux packet from the weld stud and there is no disclosure in Duffy et al. for forming a welding stud with such a construction. In fact, the disclosure of Duffy et al., that the weld stud include a flux packet in the weld end thereof, indicates the failing of Duffy et al., to disclose, teach, or suggest a welding stud having a recess formed in the weld end thereof as called for in claim 1. Accordingly, Applicant believes that which is called for in claim 1 is not shown or disclosed in Duffy et al.

The Examiner also rejected claim 18 under 35 U.S.C §102(b) as being anticipated by Duffy et al. Claim 18 calls for in part, a method of manufacturing a welding stud which includes the step of forming a second end of the weld stud with increased resistance to current flow as compared to a welding stud having a nipple and a generally planar surface thereabout. As shown in Fig. 3 of Duffy et al., reproduced on the left-hand side above by the Examiner, the weld end of the welding stud disclosed therein is clearly the type having a generally planar surface about a nipple. Applicant does not necessarily disagree that the surface about the nipple of the stud of Duffy et al. is not completely planar or that the surface is not generally perpendicular to an axis of the stud however; that is not what is called for in claim 18. Claim 18 calls for a welding stud having an increased resistance to current flow as compared to a welding stud having a nipple and a generally planar surface thereabout. The stud of Duffy et al. is clearly of the latter type. Additionally, there is no disclosure in Duffy et al. that the coated threaded fastener thereof has an increased resistance to current flow as compared to a welding stud having a nipple and a generally planar surface thereabout as called for in claim 18. Duffy et al. states that "[f]astener 30 of FIG. 3 includes a flux portion 38 which melts and flows to the joint interface between the fastener surface and a mating member during welding to facilitate the welding process …." Col. 3, lns. 63-66. That is, one of ordinary skill in the art would appreciate that the flux portion acts to minimize pollution of the weld puddle and does not increase the resistance to current flow as called for in claim 18. Accordingly, that which is called for in claim 18 is not shown or disclosed in Duffy et al.

The Examiner also rejected claim 25 under 35 U.S.C. §102(b) as being anticipated by Duffy et al. Claim 25 calls for in part, means for localizing current density generally uniformly about a majority of an area circumscribed by a perimeter of the face of the weld end of the welding stud. The Examiner asserts that "[i]n its broadest sense, Duffy et al. discloses a 'means for localizing current density generally uniformly about a majority of an area circumscribed by a perimeter of the face of the weld (i.e., second) end' or the stud." The Examiner's assertion has no support within the four corners of Duffy et al. and is unsupported by the figures the Examiner's alleges shows as much. That is, as shown in the reproduced portion of Fig. 3 of Duffy et al. above, upon welding with the stud, a person of ordinary skill in the art would readily appreciate that the weld current would be concentrated at the 'protrusion' of the encapsulated flux. That is, the weld current is not localized generally uniformly about a majority of the weld end of the stud as called for in claim 25 but is concentrated proximate the protrusion. Furthermore, a person of ordinary skill in the art would readily appreciate that the generally planar nature of the weld end of the stud of Duffy et al. is incapable of providing a localizing current density generally uniformly about a majority of an area circumscribed by a perimeter of the face of the weld end of the welding stud as called for in claim 25.

The Examiner also rejected claims 28 and 29 under 35 U.S.C. §102(b) as being anticipated by Duffy et al. Claim 28 calls for, in part, a welding stud having a second end having a nipple and constructed thereabout with at least a portion having decreased arc surface area. As argued above with respect to claim 18, the stud of Duffy et al. clearly shows a stud having a weld end that is generally planar between what the Examiner has labeled the "at least one protrusion" and the perimeter of the body. Contrary to the Examiner's label, the surface of the weld end between the encapsulated flux and the perimeter of the body is generally planar as compared to the generally non-planar construction called for in the present claims. Even further, Duffy et al., neither in the description thereof or in figures themselves, teaches, suggests, or discloses a welding stud having a second end with a nipple and constructed thereabout with at least a portion having decreased arc surface area as called for in claim 28.

Claim 29 further defines the second end of a welding stud as having a surface that is constructed with at least one protrusion arranged to face a workpiece and a remaining surface that is configured with a contact area that is decreased compared to a planar surface. As stated in the present Specification, "[d]uring a welding operation, the non-planar construction of face 54 results in an increase in effective surface area of weld end 34 and provides a stud with a decreased contact area [...] defined as that area that would contact a workpiece once plunged into

the workpiece during the welding process." Specification, ¶[0031]. That is, as shown in Figs. 4-13 of the present Application, face 54, the structure between nipple 52 and a perimeter of weld end 34 of weld stud 21, has a contact area, or the area that would contact the workpiece when plunged thereinto, that is decreased compared to a planar surface. As shown in Fig. 3 of Duffy et al. as reproduced by the Examiner, the area of the weld end of the stud thereof between the "at least one protrusion" and a perimeter of the weld stud, is generally planar with what appears to be only one directional change between the perimeter of the weld stud and the "at least one protrusion. As shown in Fig. 6 of Duffy et al, the generally planar end of the weld stud thereof is contacted with the workpiece. That is, the end thereof is not constructed with a contact area that is decreased compared to a planar surface as called for in claim 29. Accordingly, that which is called for in claim 29 is not disclosed, taught, or suggested in Duffy et al.

The Examiner next rejected claims 1-3, 6, 7, 10, 12, 16, 18, 19, 23, 24, 25, 27, 28, and 29 under 35 U.S.C. §102(b) as being anticipated by Irimies. The Examiner rejected the subject matter of these 16 claims with the reproduction of a figure of Irimies and a single sentence stating that "[i]n short, Irimies teaches a weld stud having an outwardly extending flange (i.e., 'head') at a first end, a solid cored cylindrical body, and a second reduced weld end adapted to be joined to a workpiece or a connector, said second end having a recess from which at least one protrusion (i.e. encapsulated flux packet, 'nipple') extends." Applicant respectfully disagrees. It appears that the Examiner has impermissibly reduced Applicants claimed invention to a gist or a thrust in summarily addressing 16 different claims with a single sentence and reproduction of contradictorily labeled figures of the references. Furthermore, Irimies adds nothing beyond that which the Examiner has alleged is disclosed in Duffy et al. As such, the Examiner's rejection of the present claims under 35 U.S.C. §102(b) is merely redundant in light of the rejection based on Duffy et al. and is lacking in substantially the same manner.

In order to anticipate a claim, a reference must disclose, not simply teach or suggest, each and every element of a claim. As shown in Fig. 1 of Irimies, the figure reproduced by the Examiner, the weld end of the stud thereof is clearly generally planar between the nipple and the perimeter of the weld face. That is, the weld stud of Irimies suffers from the drawbacks of non-uniform weld power distribution discussed in the background of the present Application. Claim 1 calls for, in part, a weld stud having a second end having at least one recess formed therein. The Examiner maintains that the stud of Irimies has a second end from which at least one protrusion, the flux packet extends. Applicant does not disagree however, in extending the at least one protrusion from the weld stud, Irimies fails to disclose any recess in the weld stud thereof. There

is no recess in the weld end of the weld stud of Irimies. As Irimies states, "the shank portion 12 includes a lower end section 16 which has a core insert of suitable welding flux 18 carried therein to allow end section 16 to be welded to a base material …." Col. 3, lns. 20-23. That is, the weld end of the stud of Irimies includes two dissimilar materials, the stud material and the flux material, but does not include a recess formed therein as called for in claim 1. Accordingly, that which is called for in claim 1 is not disclosed, or taught or suggested, by Irimies.

Claim 10 calls for, in part, a welding stud wherein a majority of the weld end of the welding stud has a non-planar surface. As shown in Fig. 1 of Irimies, the weld end of the stud thereof is substantially planar. The weld end of the weld stud of Irimies is clearly generally planar wherein there is only one directional change between the perimeter of the weld stud and flux insert 18. That is, a person of ordinary skill in the art would appreciate the distinction between the non-planar majority of the weld end of the welding stud of the present invention, as generally shown in Figs. 4-13, as compared to the generally planar weld end of the weld stud shown in Fig. 1 of Irimies. Accordingly, that which is called for in claim 10 is not shown or disclosed in Irimies.

A comparison of Fig. 3 of Duffy et al., alleged to anticipate claims 18, 25, 28, and 29, and Fig. 1 of Irimies, also alleged to anticipate claims 18, 25, 28, and 29, evidences the similarities between the references and the lacking thereof to disclose, teach, or suggest a welding stud as defined by the pending claims. Claim 18 calls for, in part, forming a second end of a welding stud to non-interferingly engage a workpiece and with increased resistance to current flow as compared to a welding stud having a nipple and a generally planar surface thereabout. Irimies clearly discloses a welding stud having a weld end with a nipple and a generally planar surface thereabout. There is no logical basis to support the conclusion that Irimies discloses a weld end constructed with an increased resistance to current flow as compared to the very weld end shown in the figures of Irimies. Furthermore, the Examiner has provided no support for where in Irimies it is disclosed to construct the weld end of the welding stud thereof with an increased resistance to current flow as called for in claim 18.

Claim 25 calls for, in part, means for localizing current density generally uniformly about a majority of an area circumscribed by a perimeter of the face of the weld end of the welding stud. There is no disclosure in Irimies that the welding stud shown therein is constructed for such operation. Claim 28 calls for, in part, a welding stud having a second end having a nipple and constructed thereabout with at least a portion having decreased arc surface area such that the body of the welding stud is constructed to communicate weld power from the first end to the second

end along a majority of the area defined by a perimeter of a cross-section of the body. Claim 29 calls for, in part, a welding stud having a second end with a surface constructed with at least one protrusion arranged to face a workpiece and a remaining surface that is configured with a contact area that is decreased compared to a planar surface. As shown in each of the figures of Irimies, and particularly in Fig. 3, the weld end of the stud disclosed therein is generally planar with flux insert generally centrally disposed therein and a bevel encircling the weld end. That is, the weld end does not have a portion of decreased arc surface area as called for in claim 28 nor does the weld end have a surface between a protrusion and a perimeter that is configured with a contact area that is decreased compared to a planar surface as called for in claim 29. The weld end of the welding stud of Irimies is generally planar and substantially similar to the weld end of the welding stud of Duffy et al. Neither reference discloses, teaches, or suggests a welding stud having a generally non-planar weld end, a weld end wherein a portion of the weld end has a decreased arc surface area, or a weld end having a surface between a protrusion and a perimeter that is configured with a contact area that is decreased compared to a planar surface as called for in the present claims, respectively.

The Examiner next rejected claims 4, 5, 8, 9, 11, 13, 14, 15, 16, 17, 20-22, and 26 under 35 U.S.C. §103(a) as being unpatentable over Duffy et al. in view of Rohe stating that "In short, Duffy et al. teach [sic] each and every limitation found in claims 1-3, 6, 10, 12, 18 …, 19 …, 23 …, 24 …, 25, 27, 28, and 29" and that "Duffy fails to disclose expressly, employing a plurality of ridges and grooves on the second (i.e., 'weld') end." The Examiner further states that "Rohe suggests an improved welding second surface for a weld stud comprising a plurality of annular, concentric, ridges and grooves (i.e., 'recesses'), so as to 1) enable the stud to be welded to this substrates, (2) provide an advantageous means for locating, 3) to centralize and localize welding currents in a dispersed and even manner, and 4) to concentrate the welding temperature at the ridges." As argued above, Duffy et al. does <u>not</u> disclose that which the Examiner alleges is disclosed therein. The first indication of such a failing is Examiner's having relabeled the figure of Duffy et al. in the Office Action. The second indication of the failing of Duffy et al. to disclose that which the Examiner alleges is disclosed therein are the contradictory labels inserted by the Examiner. That is, the claim terms that the Examiner used to label the figure of Duffy et al. do not correspond to that which is shown in the figure.

Furthermore, not only has the Examiner disregarded that which Rohe states about that which is shown in the figure the Examiner has reproduced, the Examiner has alleged Rohe

discloses several elements which are contrary to the express disclosure of Rohe and has mischaracterized other portions of that which is disclosed therein.

Rohe discloses a welding nut having a welding flange and spacer shoulder. That is, Rohe discloses a nut having "a cylindrical bore 13 through which a fastener element such as bolt or rivet may be passed." Col. 1, ln. 2 to col. 2, ln. 2. That is, one of ordinary skill in the art would appreciate that the nut of Rohe is usable with a threaded fastener and that, when attached to a workpiece, one of the threaded fastener and the nut must rotate or move relative to one another. That is, a person of ordinary skill in the art would appreciate that generally only one of a nut or a stud are welded to a workpiece, otherwise rotation therebetween proves difficult if not impossible. Rohe further states that "fitting 10 includes end flanges 14 and 15, having respective shoulders 16, 16', and 17, 17' defining respective end faces, normal to the axis of sleeve 12, for locating abutment against the inner faces of skin sheets 7 and 8 respectively." Col. 2, lns. 2-6. Rohe continues, "as best illustrated in Fig. 4", "[w]elding beads 18 and 23 project beyond the planes of the end faces defined by shoulders 16, 16', 27, 27' respectively, whereas grooves 17, 17', 22, 22' extend below these end face planes" and that "[c]onsequently upon projection welding of beads 18, 23 to the inner faces of skin sheets 7, 8 respectively, the excess metal in beads 18, 23, softened by the welding operation is extruded into the grooves 17, 17', 22, 22'...." That is, it is not the entirety of the flanges 14 and 15 that are welded to the workpiece but only the ridge 18 positioned thereon. The weld end, or that portion of the nut welded to a workpiece, is completely planar. That is, prior to welding to a workpiece, weld bead 18 is planar and is the only portion of the nut welded to a workpiece. Simply, Rohe discloses a connector having a weld end that is more planar than any of the weld ends of the studs of Duffy et al. or Irimies. To conclude that that portion of the nut of Rohe that is welded to a part, i.e. the weld end, is non-planar, is not supported by the express disclosure of Rohe.

Applicant does not necessarily disagree that Rohe discloses a connector have an end with a generally non-planar surface however; that is not what is called for in the present claims. The present claims define a welding stud having a welding end that is generally non-planar. That is, that portion of the stud; by its very nature of being a stud rather than a hollow tube, collar, or nut; defines that the weld end is actually welded to a part. A person of ordinary skill in the art would appreciate as much. Concluding that Rohe discloses a connector with a weld end that includes a plurality of ridges or grooves is beyond the disclosure of Rohe. Rohe states that "[i]n the final structure, the welding beads 18 and 23 are united to the skin sheets while the shoulders 16, 16', 17, 17' are in contact bearing engagement with the inner faces of the skin sheets." Col. 2, lns. 58-

61. That is, Rohe is explicit that only ridge 18 is welded to a workpiece. To conclude otherwise is contrary to the express disclosure of Rohe. Accordingly, at least for the reasons set forth above, Applicant believes that which is called for in the present claims is not disclosed, taught, or suggested in the art of record and the addition of Rohe adds nothing thereto. Simply, each of the references cited by the Examiner discloses welding studs or welded connectors having generally planar connection faces. As argued throughout this response, to conclude otherwise is beyond or contrary to that which is disclosed in the art of record. Accordingly, in addition to Duffy et al. failing to disclose, teach, or suggest that which the Examiner alleges is shown therein, Rohe adds nothing thereto. As such, Applicant believes claims 4, 5, 8, 9, 11, 13, 14, 15, 16, 17, 20-22, and 26, in addition to being patentable pursuant to the chain of dependency, are patentably distinct over Duffy et al. in view of Rohe.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-29.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

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